

REMARKS

This Amendment is filed in response to the Office Action dated July 5, 2006. For the following reasons the application should be allowed and the case passed to issue. No new matter or considerations are introduced by this amendment. Support for the amendment to claim 10 is found in the specification at page 5, lines 12-20 and page 6, lines 7-24. The amendment to claims 13, 15, and 20 are supported by claim 10. Claim 25 is amended to maintain proper dependency.

Claims 10-27 are pending in this application. Claims 1-9 were previously canceled. Claims 23-27 are allowed. Claims 10-12, 15, and 17-19 are rejected. Claims 13, 14, 16, and 20 were objected to. The status of claims 20 and 21 was not addressed in the Office Action. Claims 10, 13, 15, 20, and 25 have been amended in this response.

Allowable Subject Matter

Claims 23-27 are allowed. Claims 13, 14, 16, and 20 were objected to as being dependent upon a rejected base claim. In addition, it is noted that the Examiner did not reject claims 20 and 21.

Applicant gratefully acknowledges the indication of allowable subject matter. Claims 13 and 20 have been rewritten in independent form and, therefore, should be allowable.

Claim Rejections Under 35 U.S.C. § 103

Claims 10-12, 15, and 17-19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lustig et al. (U.S. Pat. No. 5,998,807). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 10, is a method of manufacturing semiconductor devices comprising providing a semiconductor substrate comprising a SiGe layer formed on a base layer. A silicon layer is formed on the SiGe layer. The semiconductor substrate comprises one or more first regions and one or more second regions spaced apart from each other by isolation regions between the first regions and the second regions. At least a portion of the silicon layer is selectively removed only in the one or more first regions. A p-type dopant is implanted in the one or more first regions after selectively removing at least a portion of the silicon layer and an n-type dopant is implanted in the one or more second regions. A gate oxide layer is formed in the one or more first regions and the one or more second regions. A gate electrode layer is formed over the gate oxide layer.

Another aspect of the invention, per claim 15, is a method of manufacturing semiconductor devices comprising providing a semiconductor substrate comprising a SiGe layer formed on a base layer and a silicon layer formed on the SiGe layer. The semiconductor substrate comprises one or more first regions and one or more second regions spaced apart from each other by isolation regions between the first regions and the second regions. At least a portion of the silicon layer is selectively removed only in the one or more first regions. A p-type dopant is implanted in the one or more first regions and an n-type dopant is implanted in the one or more second regions. A gate oxide layer is formed in the one or more first regions and the one or more second regions. A gate electrode layer is formed over the gate oxide layer. The silicon layer is oxidized to form the gate oxide layer.

The Office Action asserts that Lustig et al. disclose a semiconductor substrate comprising a SiGe layer on a base layer with first and second regions and an isolation region in between. A

dopant is implanted in the source and drain, and a gate oxide and electrode are formed. Fig. 6 shows selective removal of at least a portion of the silicon layer.

Lustig et al., however, do not suggest the claimed method of manufacturing semiconductor devices. Lustig et al. disclose removing the silicon layer in the first region after implanting the p-type dopant. Lustig et al. do not suggest **implanting** a p-type dopant in the one or more first regions **after selectively removing at least a portion of the silicon layer**, as required by claim 10. The Examiner asserted that oxidizing the silicon to form a gate oxide would have been obvious to form high-quality oxide. Lustig et al., however, do not suggest forming a gate oxide layer in the one or more first regions and the one or more second regions, wherein the **silicon layer is oxidized to form the gate oxide layer**, as required by claim 15. The Examiner's conclusion of obviousness is wholly unsupported by the cited prior art.

Obviousness can be established only by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Joines*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Fine*, F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Although a reference can be modified, the prior art must suggest the desirability of modifying a reference. See *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). There is no suggestion or motivation in Lustig et al. to modify the method of Lustig et al. to suggest implanting a p-type dopant in the one or more first regions after selectively removing at least a portion of the silicon layer, as required by claim 10; and forming a gate oxide layer in the one or more first regions and the one or more second regions, wherein the silicon layer is oxidized to form the gate oxide layer, as required by claim 15.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989).

Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997). There is no motivation in Lustig et al. to modify the method of Lustig et al. to form a gate oxide layer in the one or more first regions and the one or more second regions, wherein the silicon layer is oxidized to form the gate oxide layer, as required by claim 15.

In rejecting a claim under 35 U.S.C. § 103, the Examiner is required to discharge the initial burden by, *inter alia*, making "**clear and particular**" factual findings as to a **specific understanding** or **specific technological principal** which would have **realistically** impelled one having ordinary skill in the art to modify an applied reference to arrive at the claimed invention - not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolchem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab, supra*; *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). That burden has not been discharged, as the Examiner has provided no factual basis to modify the method of Lustig et al. to form a gate oxide layer in the one or more first regions and the one or more second regions, wherein the silicon layer is oxidized to form the gate oxide layer, as required by claim 15. The Examiner did not make the requisite "clear and particular" factual

findings to support the conclusion that one having ordinary skill in the art would have been realistically led to the claimed method of manufacturing semiconductor devices.

The only teaching of a method of manufacturing semiconductor devices by implanting a p-type dopant in the one or more first regions after selectively removing at least a portion of the silicon layer, as required by claim 10, and forming a gate oxide layer in the one or more first regions and the one or more second regions, wherein the silicon layer is oxidized to form the gate oxide layer, as required by claim 15, is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The Examiner's unsupported conclusory statements are not sufficient to establish a prima facie case of obviousness. The Examiner's conclusion of obviousness appears to be rooted in impermissible hindsight reasoning.

The dependent claims are allowable for at least the same reasons as the independent claims from which they respectively depend and further distinguish the claimed method. For example, claim 12 further requires that substantially all of the silicon layer is removed from the one or more first regions. Claim 15 further requires oxidizing the silicon layer to form the gate oxide. The cited prior art does not suggest the claimed method with these additional limitations.

Therefore, in light of the above Amendments and Remarks, this application should be allowed and the case passed to issue. If there are any questions regarding these remarks or the application in general, a telephone call to the undersigned would be appreciated to expedite prosecution of the application.

Application No.: 10/620,605

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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